



Demystifying Web GIS

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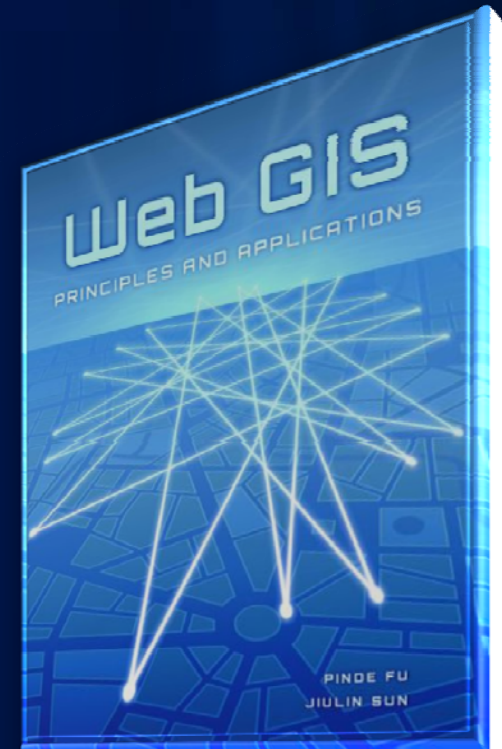
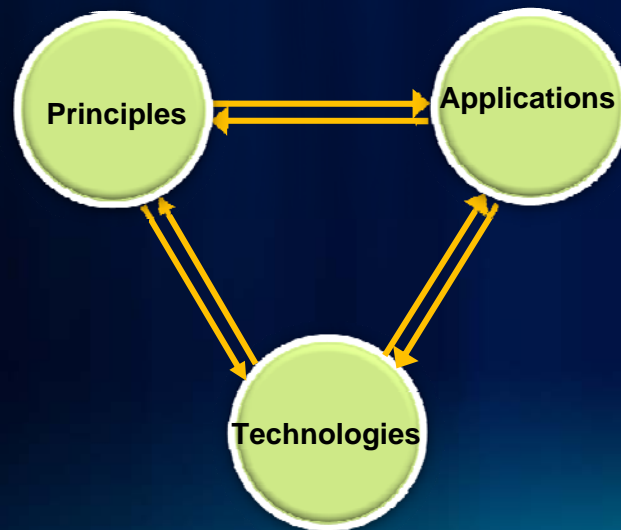


Web GIS: Principles and Applications

Pinde Fu, Jiulin Sun



Web GIS course
Henan University, China



Overview of Web GIS

- **Concept and applications**
- **Technology advances**
- **Hot topics and prospects**

A time of change

USPS, Washington post / News Week
Blockbuster, NetFlix

...



1962
CGIS

Roger Tomlinson
Father of GIS

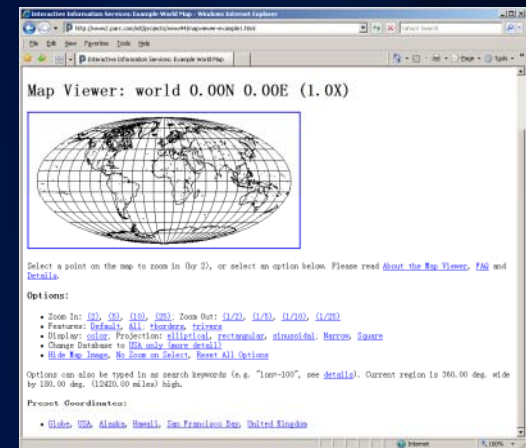
1969
Internet



1990
WWW

Tim Berners-Lee
Father of the Web

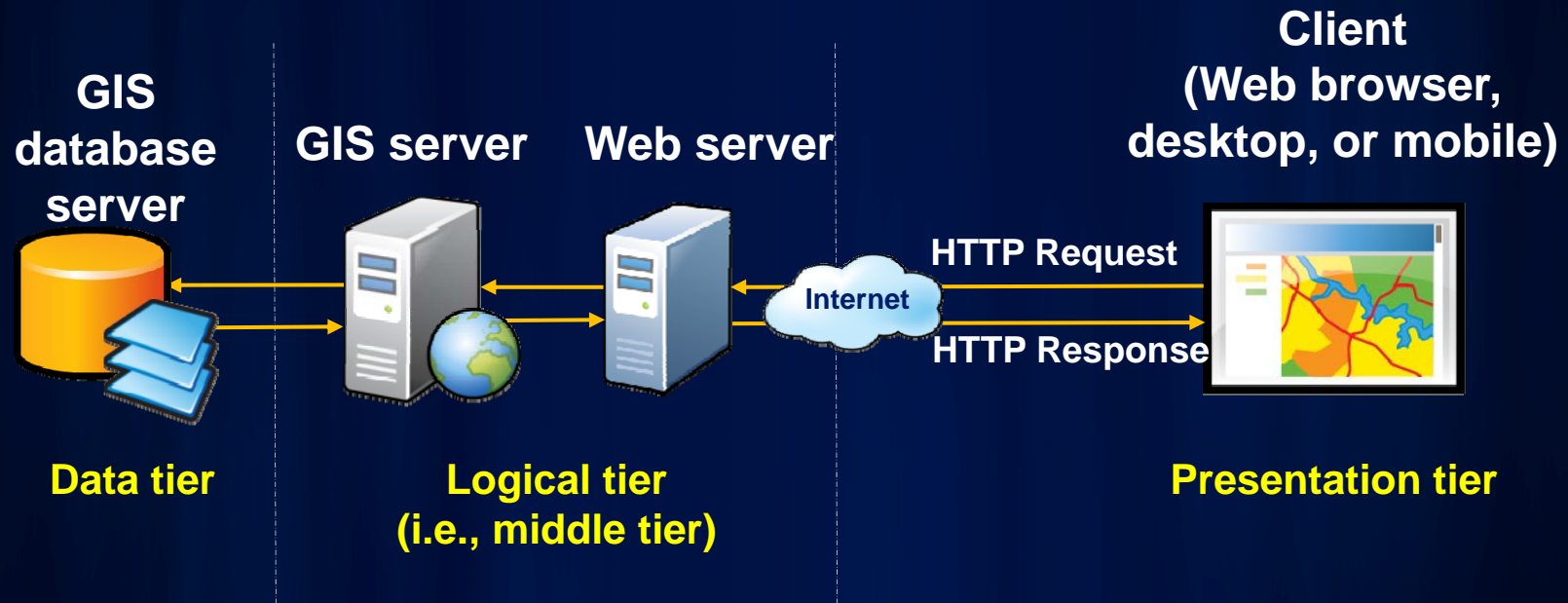
URL, HTTP, HTML



1993
Web GIS

Xerox PARC Viewer

Definition

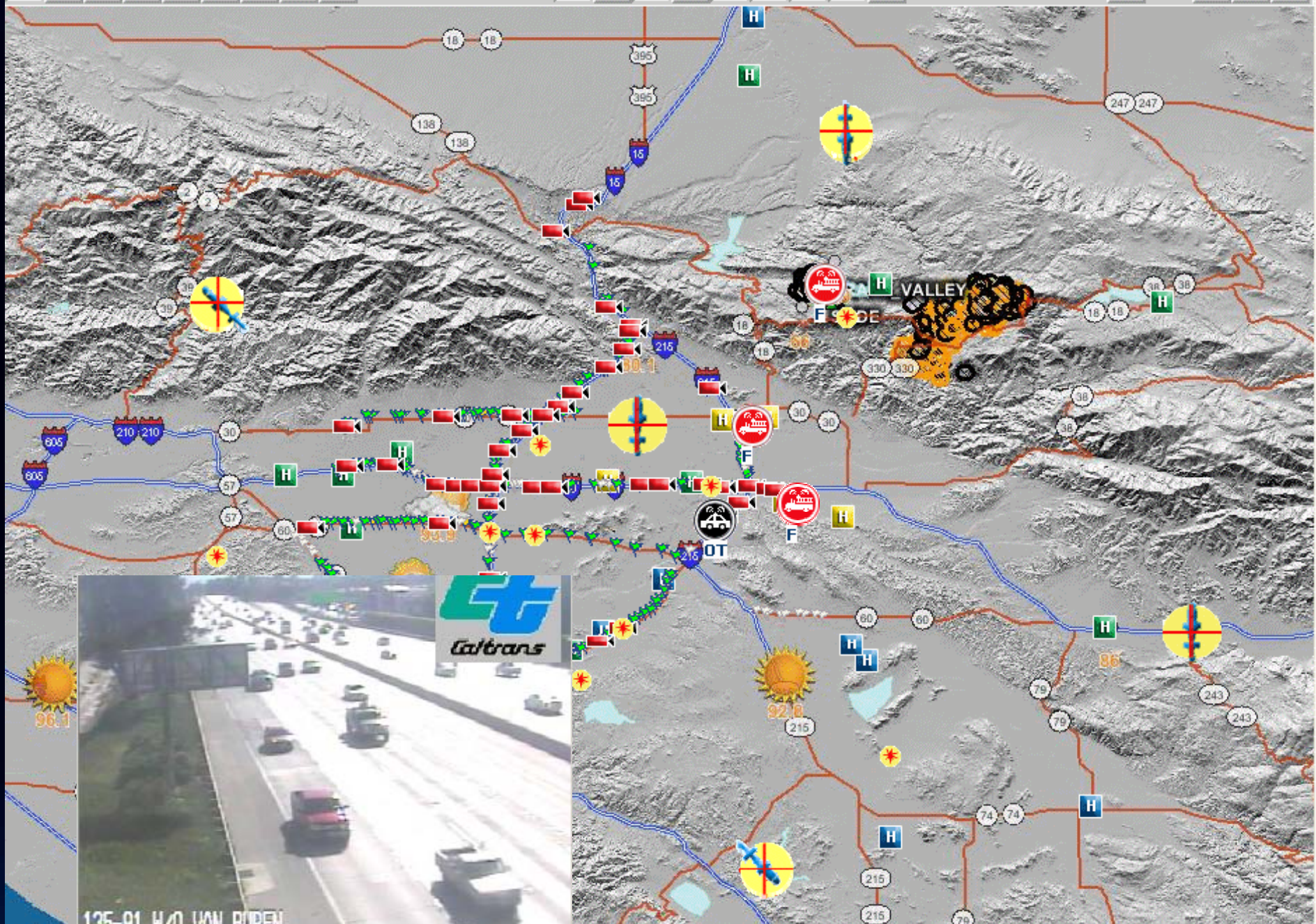


URL
HTTP
HTML
...

An engaging and powerful tool for e-gov

- National Spatial Data Infrastructure (NSDI)
- Public information service
- Two way communication
- Operations and decision



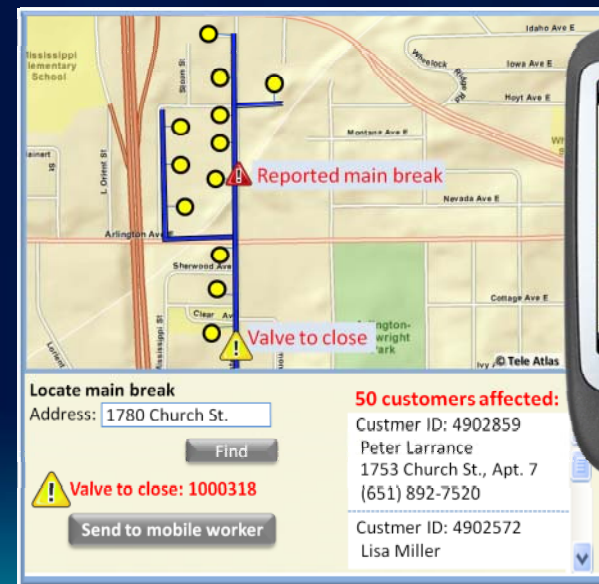
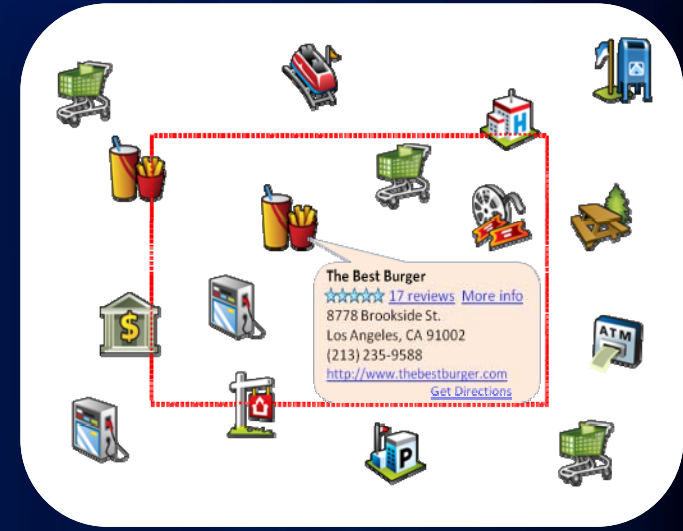




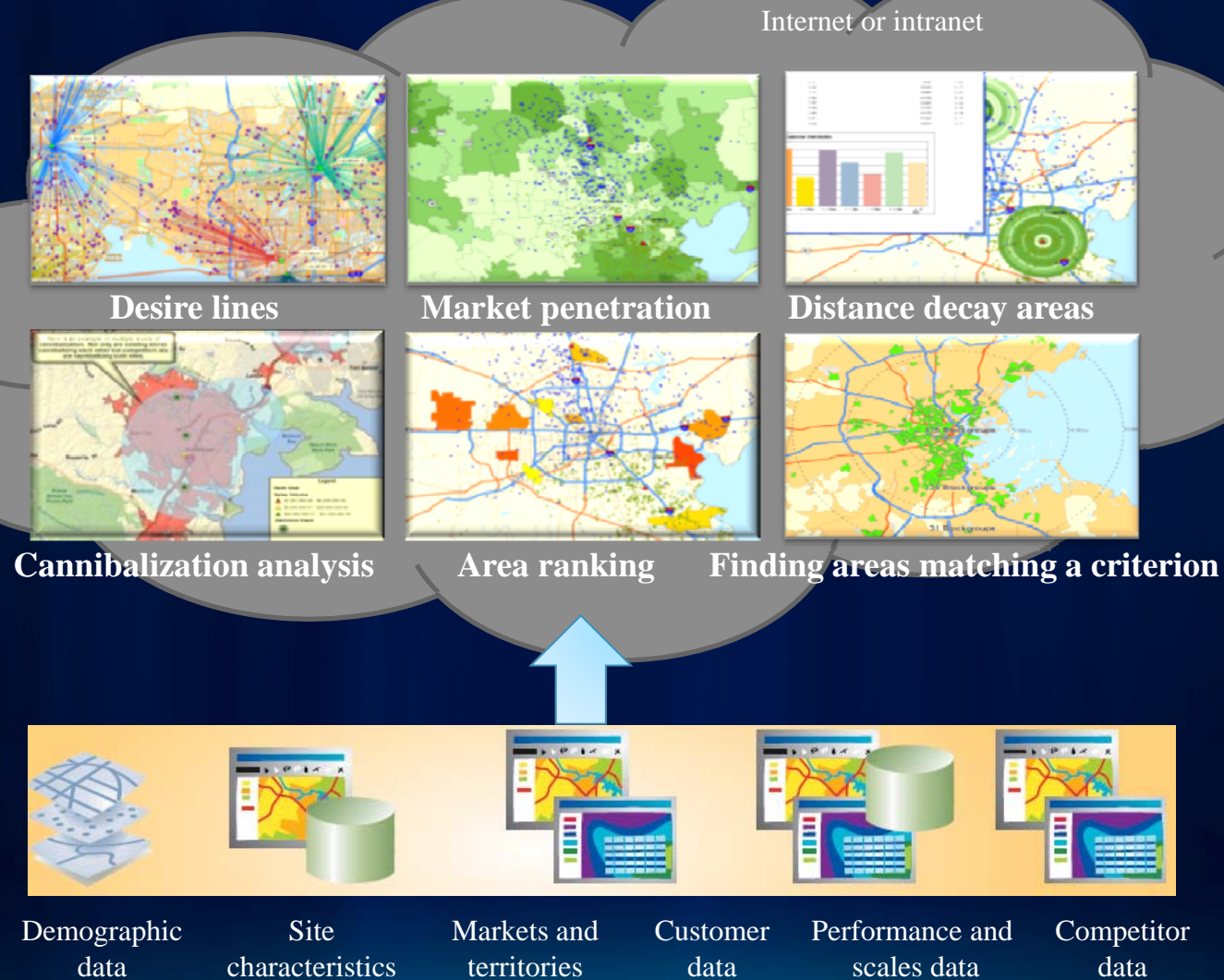
Web GIS = Life

New business models and commodities

- Marketing & advertising
 - Geotargeting
 - Location based services
- Business operations
 - Customer relationship management
 - Enterprise resource planning
- Business analysis



Business Analysis



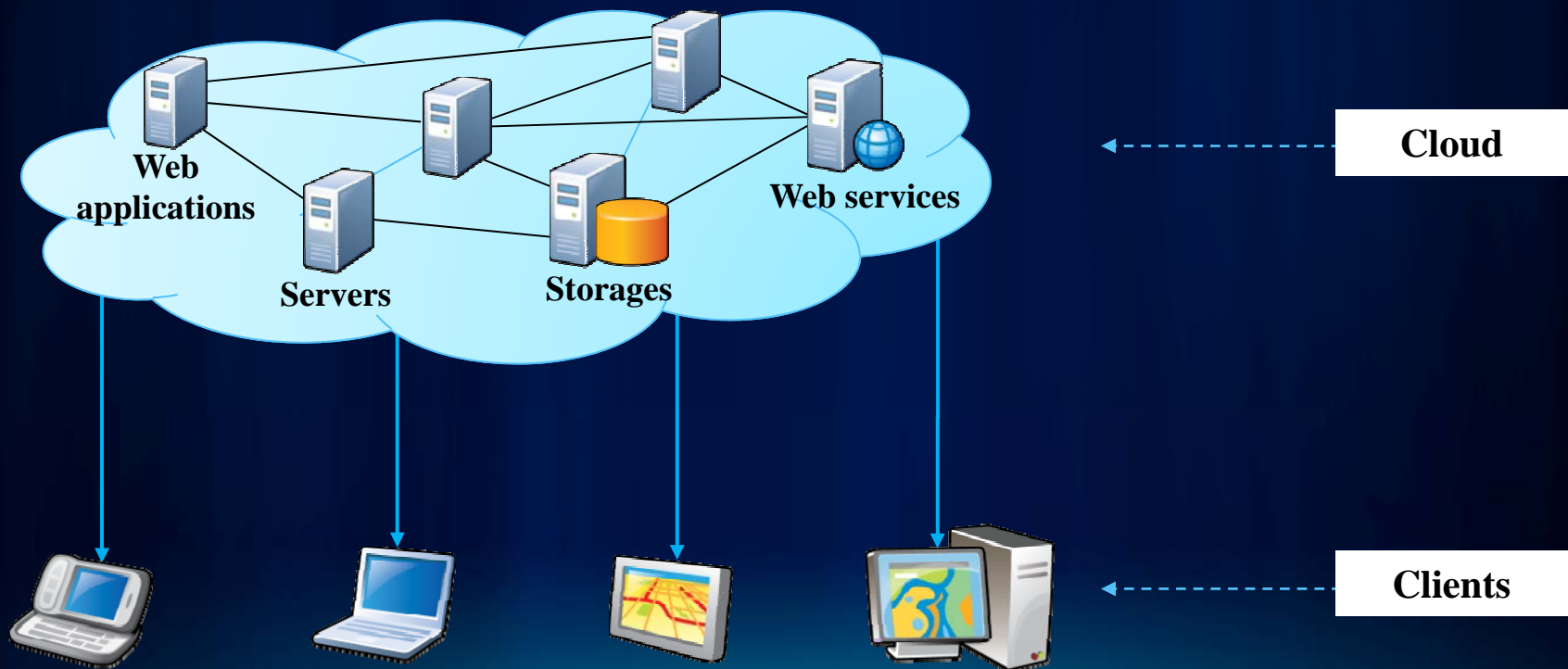
Business Analyst Online, (iOS & Web)



Web GIS == Profit

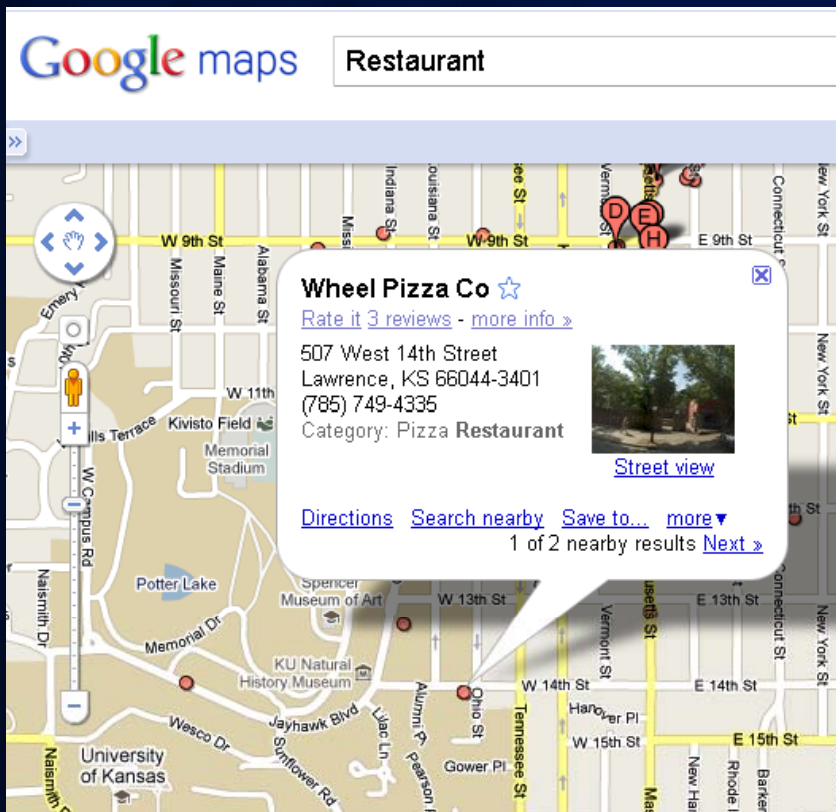
A new infrastructure for e-Science

- cloud computing
- unlimited database
- collaboration platform

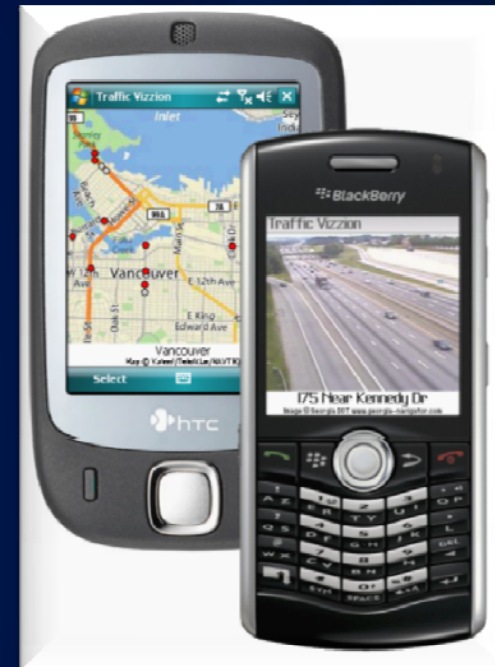


An essential component for daily life

who, what, when, **where (GIS!)**, why



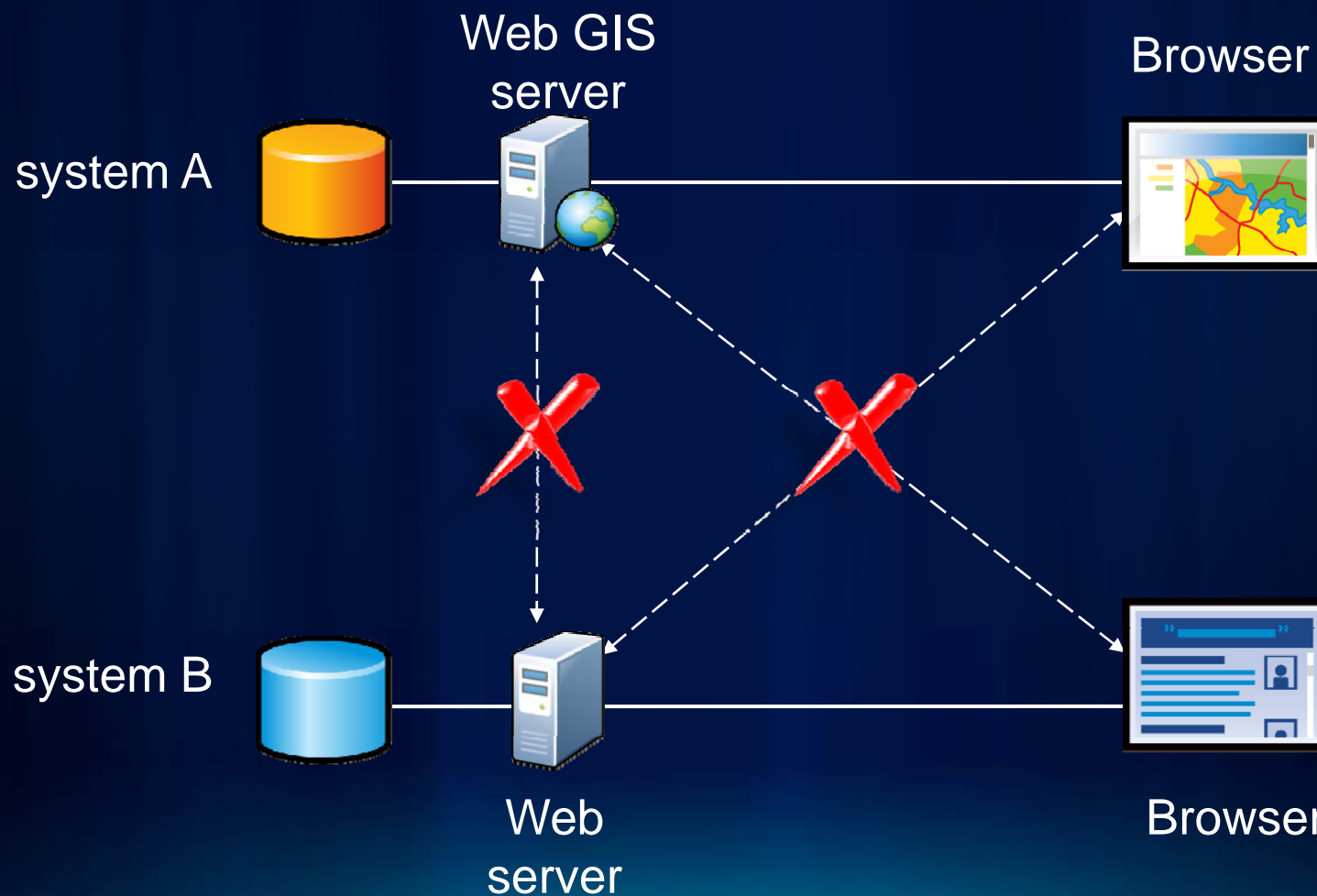
Searching for restaurants, book stores...



Checking real-time traffic

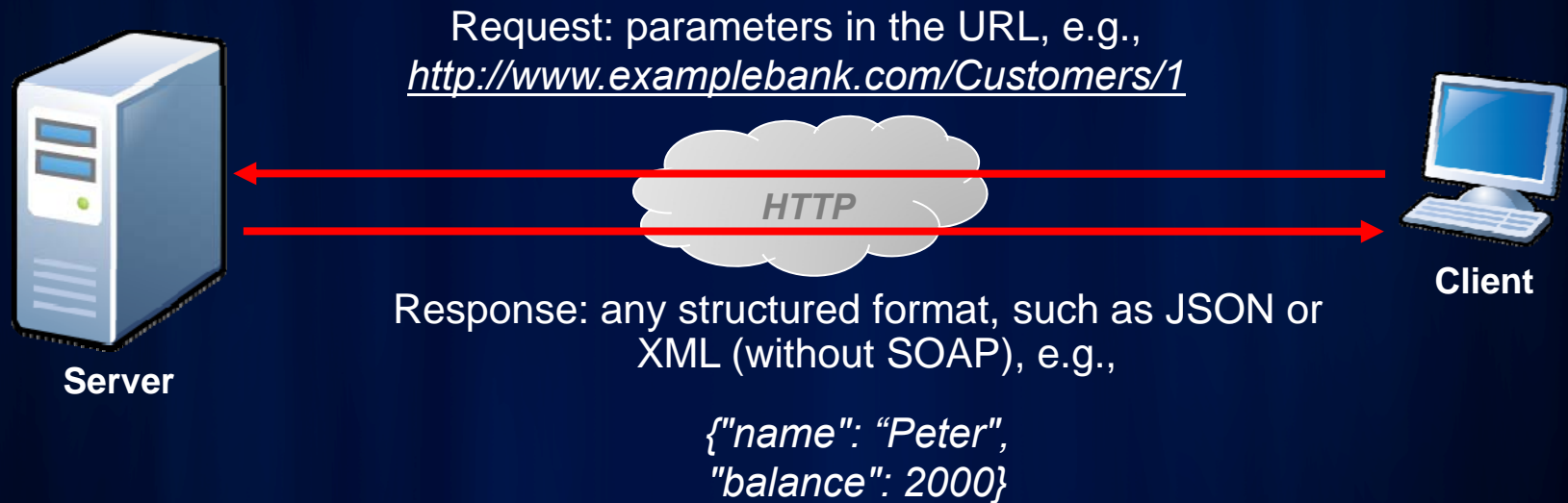
The fourth R

From Web sites to Web services ~1999



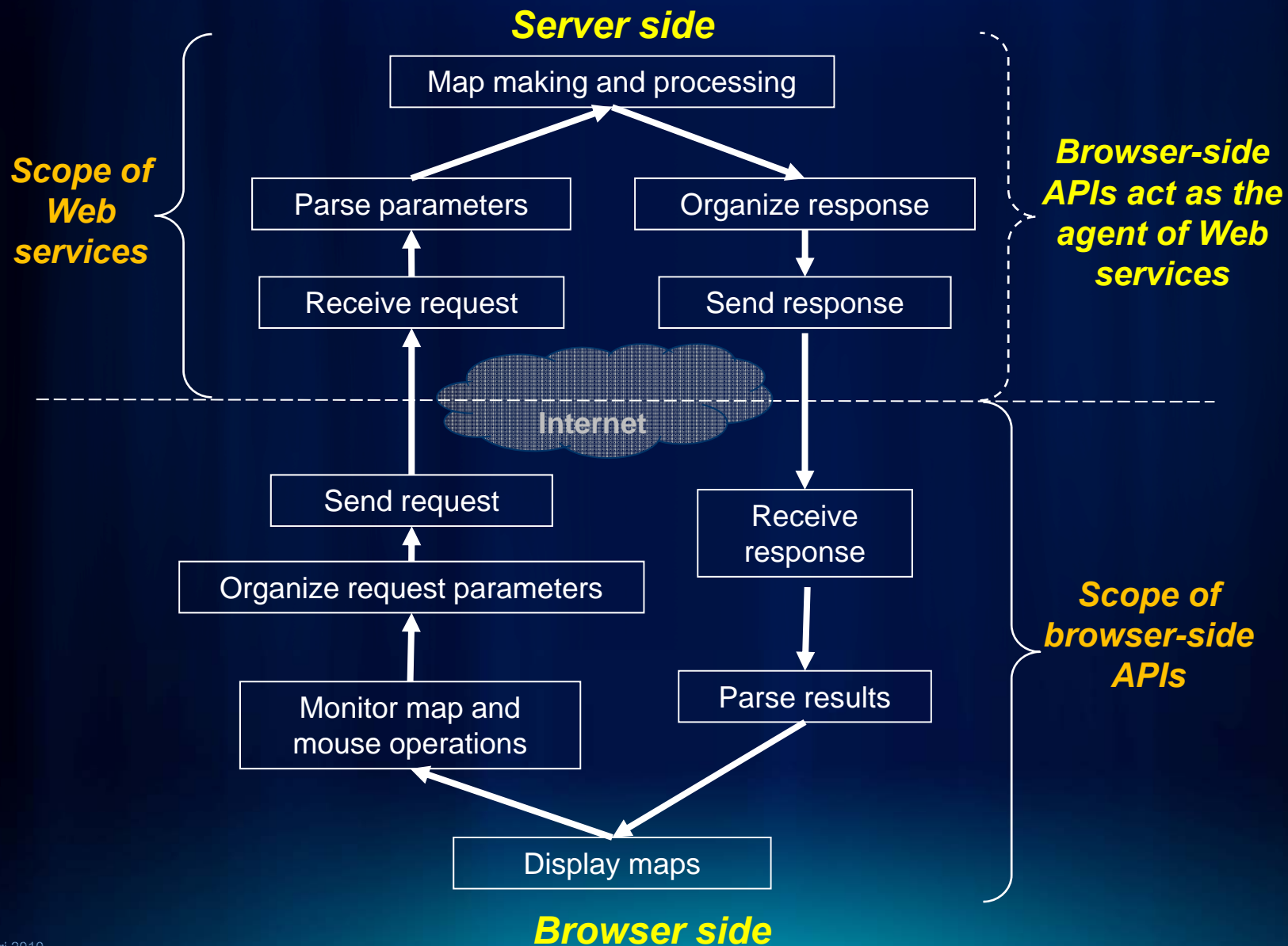
From SOAP to REST

became popular after 2005



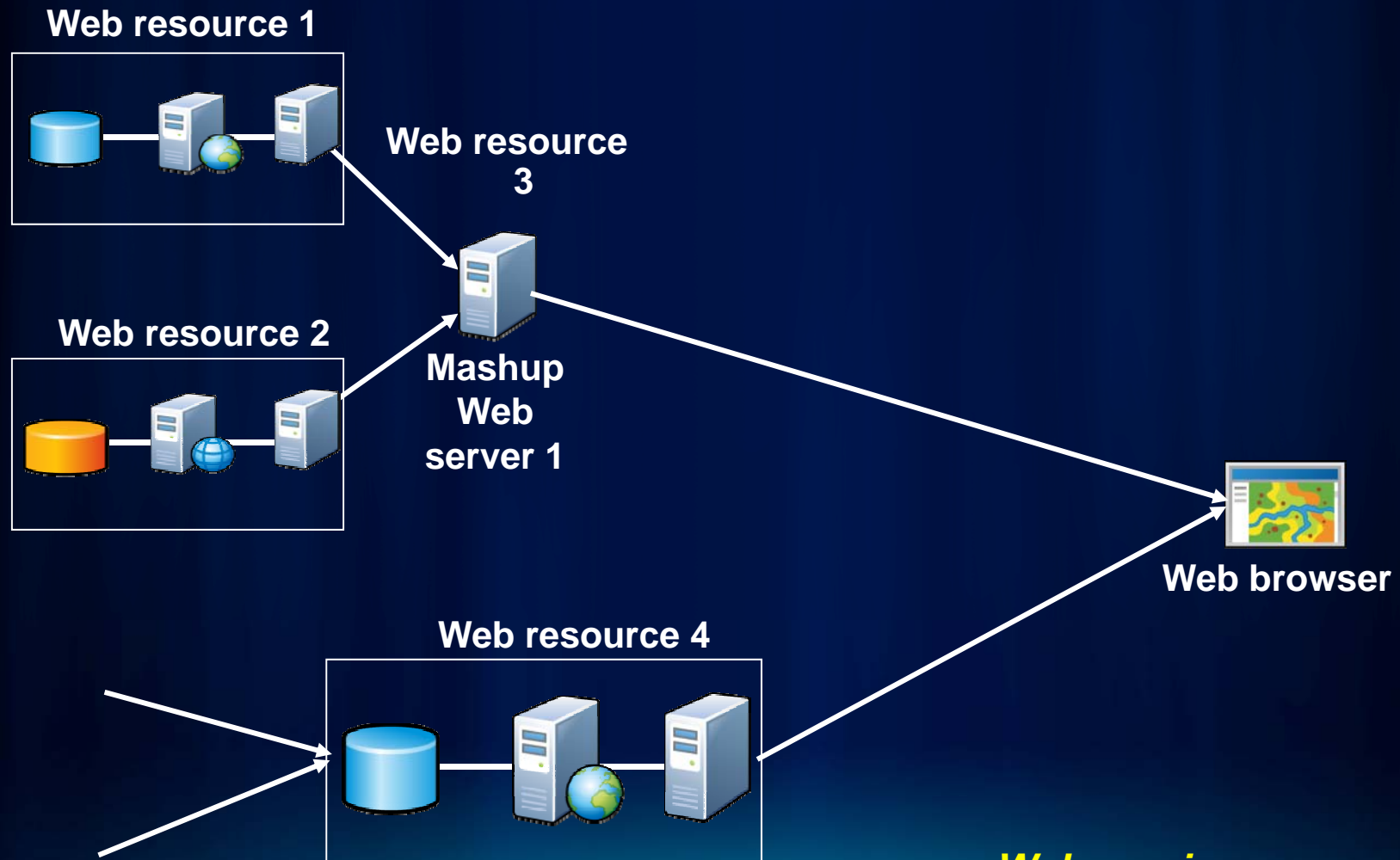
Command line of the Web

From Web Services to browser side APIs



From three tiers to n-tiers

Mashup



—Web services ecosystem

From wired to wireless

Mobile GIS: increasingly being connected to the Web

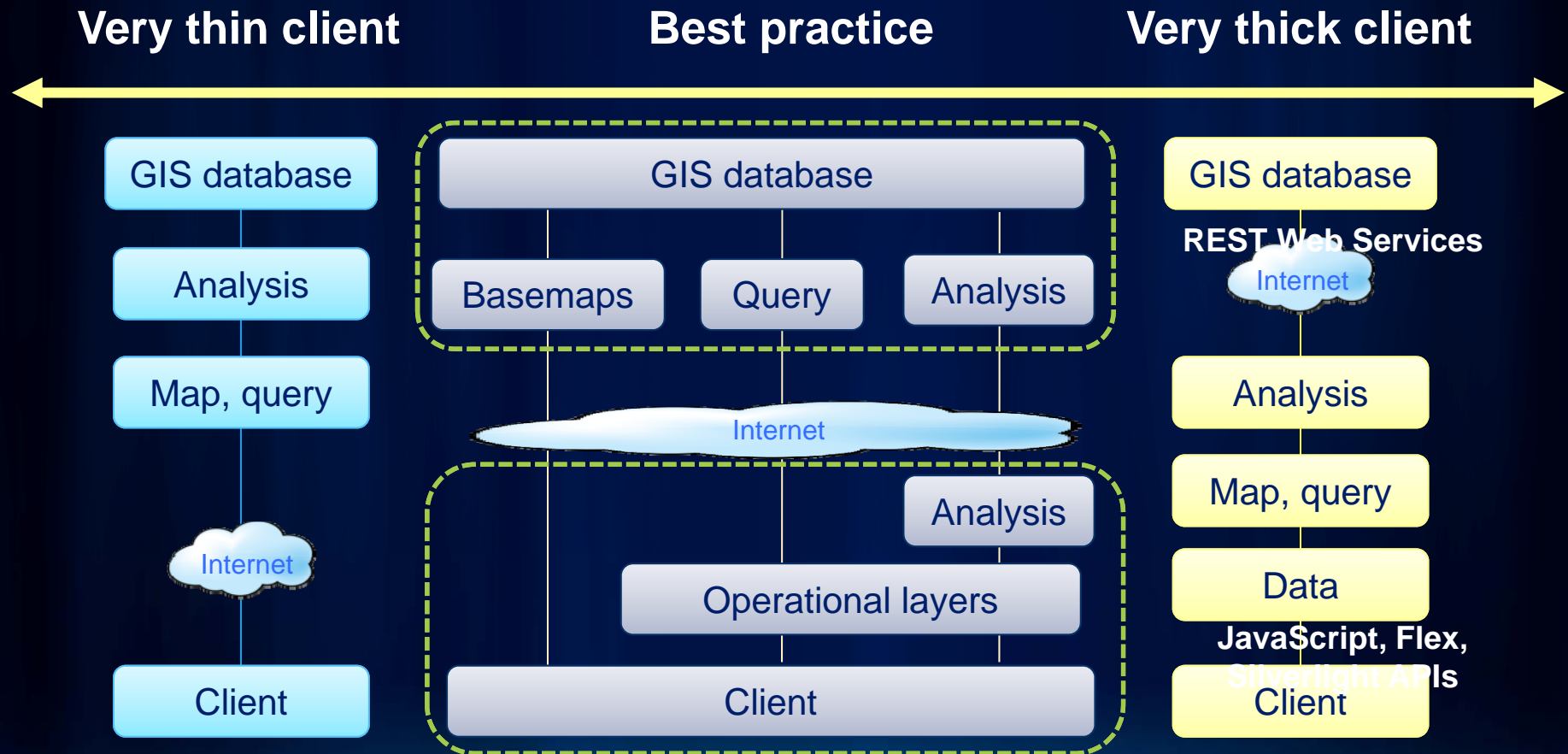


Mobile GIS development options

- **Native application based** (Object C, Java ME, .Net Mobile)
 - With data
 - Without data
- **Mobile browser based**
 - WAP (wireless application protocol)
 - Full-featured html/JavaScript (ArcGIS API for JS on IOS)
 - Plug-ins (Android supports Flash)
- **Text message based approach**



The thin, the thick, and the best practice



Hot topics

- **Volunteered Geographic Information (VGI)**
- **Geocollaboration**
- **GeoTagging**
- **Geoparsing**
- **Geotargeting**
- **Online Virtual Reality**
- **Augmented Reality**
- **Sensor Web, Internet of Things**
- **Cloud Computing and Cloud GIS**
- ...

Cloud Computing and Cloud GIS

- **IaaS (Infrastructure as a Service)**

- Amazon Simple Storage Service (S3)

- **PaaS (Platform as a Service)**

- Microsoft Windows Azure
- Google App Engine

ArcGIS Server Machine Image for Amazon

- **SaaS (Software as a Service)**

- Web services
- Web applications (online e-mail, Google Docs)

ArcGIS Online services

ArcGIS.com

Fast deployment, elastic, cheaper...

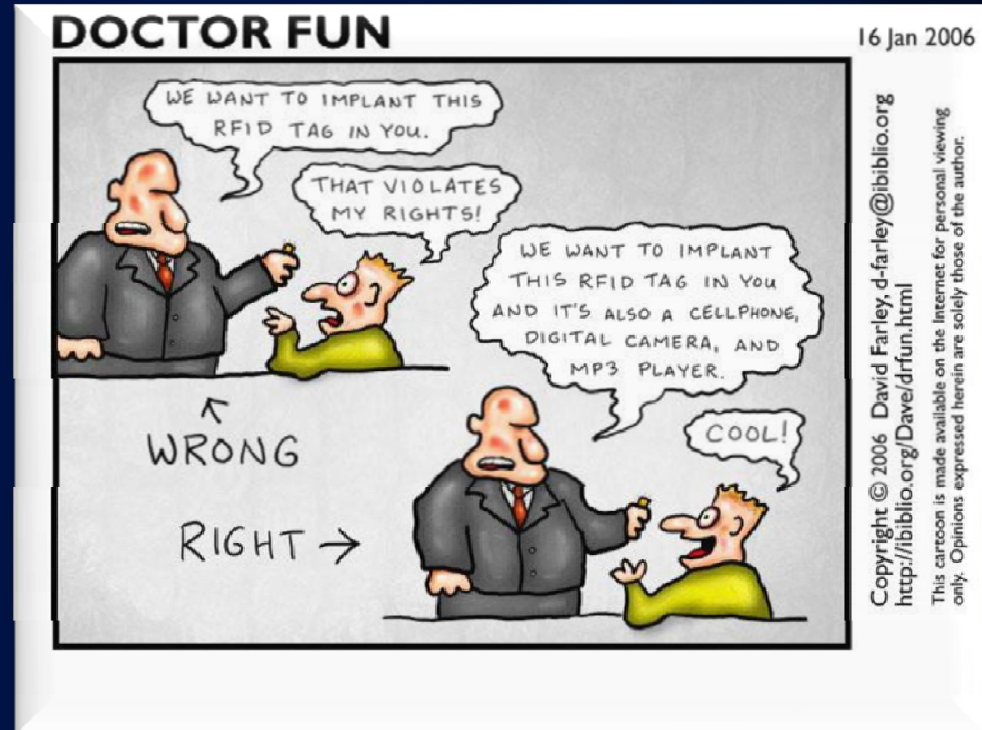
Online virtual reality + virtual globe



Behavior Privacy and Locational Privacy



Sources: page 61 of July 5, 1993 issue of The New Yorker, (Vol.69 (LXIX) no 20)



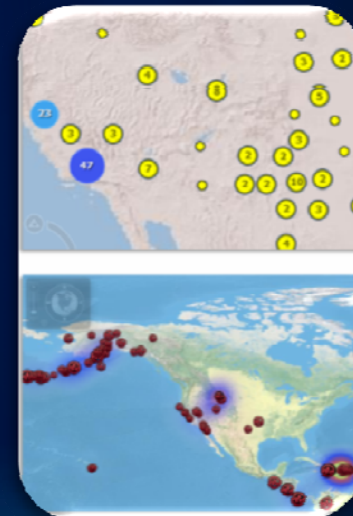
Personally Identifiable Information

Challenges

- Security
- Reliability
- Scalability
- Data quality and uncertainty
- Standards and Interoperability
- Semantic interoperability
- Copyright
- Business models
- Digital divide
- ...

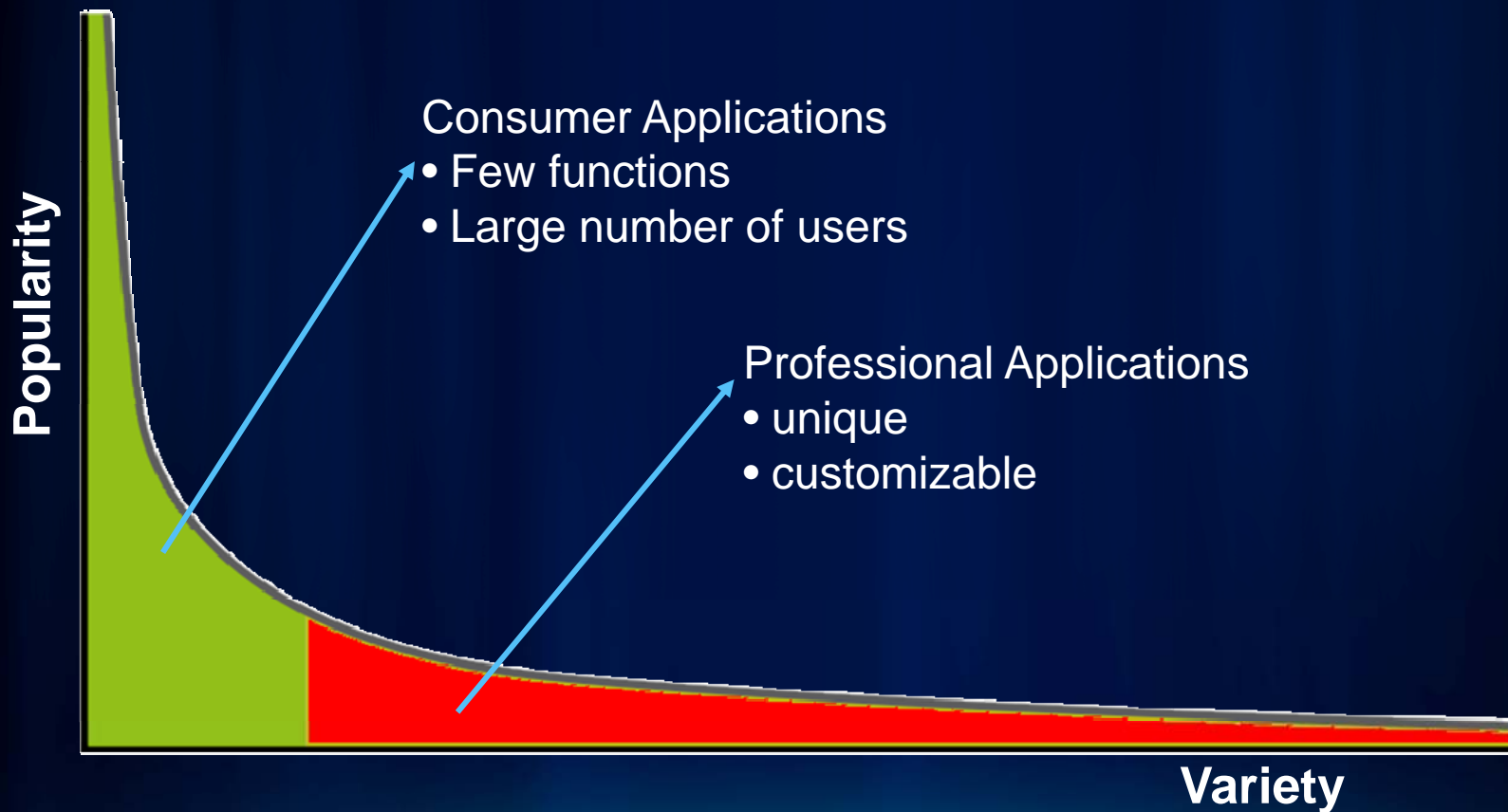
Prospects

1. **Open geospatial Web services**
2. **More powerful client**
3. **Mobile as the pervasive client platform**
4. **Real time GIS**
5. **Cloud GIS**
6. **More intelligent**



Toward societal GIS

Pervasive platform, ubiquitously available, seamlessly integrated into lives and jobs



— Anyone, anything, anytime, anywhere

Questions?

